

Claims

- [c1] 1. A fuel cell stack enclosure which fully or partially encloses a fuel cell stack, comprising at least one chamber having intake means for accepting a reactant and exhaust means for passing the reactant to the fuel cell stack.
- [c2] 2. The fuel cell stack enclosure of claim 1 comprising three layered chambers, wherein an inner chamber is adjacent the fuel cell stack and an intermediate chamber is disposed between an outer chamber and the inner chamber; and wherein reactant flow is directed into the outer chamber, then into the intermediate chamber, then into the inner chamber and finally into the fuel cell stack, directly or indirectly.
- [c3] 3. The fuel cell stack enclosure of claim 2 wherein the enclosure comprises at least two substantially planar sections.
- [c4] 4. The fuel cell stack enclosure of claim 3 wherein the enclosure comprises three substantially planar sections.
- [c5] 5. The fuel cell stack enclosure of claim 2 further comprising an insulating layer disposed between the inner chamber and the intermediate chamber or between the intermediate chamber and the outer chamber.
- [c6] 6. The fuel cell stack enclosure of claim 2 further comprising an insulating layer disposed between the inner chamber and the

fuel cell stack.

- [c7] 7.The fuel cell stack enclosure of claim 2 further comprising control means for varying reactant flow rate through the enclosure.
- [c8] 8.The fuel cell stack enclosure of claim 1 comprising:
 - (a)at least three closed concentric cylindrical shells including an outer shell, an inner shell and at least one intermediate shell;
 - (b)wherein the outer shell and the at least one intermediate shell define a first annular chamber between them, and the inner shell and the at least intermediate shell define a second annular chamber between them;
 - (c)an intake port defined by the outer shell for providing fluid communication from the exterior of the enclosure to the first annular chamber;
 - (d)a cross-over port defined by the intermediate shell for providing fluid communication between the first annular chamber and the second annular chamber;
 - (e)an outlet port defined by the inner shell for providing fluid communication between the second annular chamber and the interior space of the enclosure.
- [c9] 9.The enclosure of claim 8 wherein the intake port directs air tangentially into the first annular chamber.

- [c10] 10.The enclosure of claim 8 wherein the cross-over port is a vertically flattened oval.
- [c11] 11.The enclosure of claim 8 wherein the intake port and the cross-over port are located on opposing vertical ends of the enclosure.
- [c12] 12.The enclosure of claim 8 comprising three closed concentric shells.
- [c13] 13.The enclosure of claim 8 further comprising means for pumping air into the first annular chamber through the intake port.
- [c14] 14.The enclosure of claim 8 wherein the enclosure comprises two semi-cylindrical halves and further comprises means to pass fluids between the first annular chambers and second annular chambers respectively.